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10/720,847	11/25/2003	Hajime Kimura	12732-181001 / US6768/692	3959

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EXAMINER	
PERVAN, MICHAEL	
ART UNIT	PAPER NUMBER
2629	

NOTIFICATION DATE	DELIVERY MODE
05/28/2009	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

PATDOCTC@fr.com

Office Action Summary	Application No.	Applicant(s)	
	10/720,847	KIMURA, HAJIME	
	Examiner	Art Unit	
	Michael Pervan	2629	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *12 March 2009*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,7,18,20,21,28,59,60,63-66 and 71-87* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,7,18,20,21,28,59,60,63-66 and 71-87* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *12 July 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *3/12/09*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

1. Applicant's arguments filed March 12, 2009 have been fully considered but they are not persuasive.

Applicant (on pages 8-11 of argument) argues that it would not have been obvious to modify Knapp and Suzuki with Shin because the transistors in Shin are arranged in a current mirror and changing the size of the second transistor does not necessarily equate to a faster precharge. Examiner respectively disagrees.

Shin was merely cited to show that transistors could have different sizes and that the sizes of the transistors affect the amount of current flowing through the transistor. Even though the two transistors from Shin would not form a current mirror in the combination, the idea of increasing the size of the transistor in the precharge circuit would have been obvious to one of ordinary skill in the art because more current could then flow through the transistor. As a result, the desired voltage can be reached faster. For this reason, the combination still reads on the claim and the rejection stands.

Applicant's arguments, see pages 11-14 of argument, filed March 12, 2009, with respect to the rejection(s) of claim(s) 18, 28, 59, 66, 74 and 82-87 under 35 USC § 103 have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of a different interpretation of the previously applied references, see rejection below.

Applicant (on pages 14-15 of argument) argues that the second switch does not control an electrical connection between the driven circuit and multiple current sources. Examiner respectively disagrees.

The driven circuit (pixel block 10) of Knapp is connected to the signal drive circuit of Suzuki. The drive circuit of Suzuki contains multiple current sources configured to input a signal to the driven circuit. Therefore, the switch (S_1-S_x) controls an electrical connection between the driven circuit and plural current sources because it connects and disconnects the driven circuit from the signal drive circuit. Since the claim does not specify the driven circuit receives a signal selected from plural current sources, the combination still reads on the claim and the rejection stands.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 1, 7, 18, 20, 21, 28, 59, 60, 63-66 and 71-87 are rejected under 35 U.S.C. 103(a) as being unpatentable over Knapp et al (US 6,373,454) in view of Suzuki (US 6,369,786) in further view of Shin (US 2003/0231152).

In regards to claims 1, 71, 72, 76, 78 and 80, Knapp discloses a semiconductor device comprising:

a driven circuit (pixel block 10) comprising a first transistor (Fig. 2; transistor 30);

a signal line (I_{in}) electrically connected to the first transistor through a node (Fig. 2; as can be seen from the drawing, the first transistor (30) is connected through a node (36) to a signal line),

wherein a gate electrode of the first transistor is connected to a drain electrode of the first transistor through a switch (32) (Fig. 2 and col. 6, lines 32-34).

Knapp does not disclose a first precharge circuit electrically connected to the signal line and comprising a second transistor, wherein a gate electrode of a second transistor is electrically connected to a drain electrode of the second transistor, wherein a gate width of the second transistor is larger than a gate width of the first transistor and wherein the first precharge circuit is configured to perform a precharge of the driven circuit prior to supplying the signal current to the driven circuit.

Suzuki discloses a first precharge circuit (3A) electrically connected to the signal line and comprising a second transistor (diodes D_1-D_x) (col. 5, lines 50-54), wherein a gate electrode of a second transistor is electrically connected to a drain electrode of the second transistor (col. 5, lines 50-54; since connecting a transistor in such a manner causes the transistor to act as a diode, having a diode instead of a diode connected transistor would still act in the same manner), and wherein the first precharge circuit is configured to perform a precharge of the driven circuit prior to supplying the signal current to the driven circuit (col. 5, line 65-col. 6, line 7).

It would have been obvious at the time of invention to modify Knapp with the teachings of Suzuki, precharge voltage being supplied to a node prior to supplying a

signal current, because it would improve display characteristics since it would take less time to reach the display voltage because it has been precharged.

Knapp and Suzuki do not disclose wherein a gate width of the second transistor is larger than a gate width of the first transistor.

Shin discloses wherein a gate width of the second transistor is larger than a gate width of the first transistor (paragraph 16).

It would have been obvious at the time of invention to modify Knapp and Suzuki with the teachings of Shin, gate width of the second transistor being larger than the gate width of the first transistor, because it allows for a greater current to flow from the precharge circuit, which allows for a faster precharge.

In regards to claims 7 and 77, Knapp does not disclose the semiconductor device according to claim 1, further comprising

an impedance transformation amplifier.

Suzuki discloses an impedance transformation amplifier (col. 5, lines 62-63).

It would have been obvious at the time of invention to modify Knapp with the teachings of Suzuki, precharge voltage being supplied to a node prior to supplying a signal current, because it would improve display characteristics since it would take less time to reach the display voltage because it has been precharged.

In regards to claims 18 and 82, Knapp discloses a semiconductor device comprising:

a driven circuit (pixel block 10) comprising a first transistor (Fig. 2; first transistor (30));

a first switch for controlling an electrical connection between the driven circuit and the precharge circuit (Fig. 2; first switch (37)); and

wherein a gate electrode of the first transistor is connected to a drain electrode of the first transistor through a switch (Fig. 2 and col. 6, lines 32-34).

Knapp does not disclose a precharge circuit comprising a second transistor, a second switch for controlling a connection between the driven circuit and a current source circuit, wherein a gate electrode of a second transistor is electrically connected to a drain electrode of the second transistor, wherein a gate width of the second transistor is larger than a gate width of the first transistor and wherein the first precharge circuit is configured to perform a precharge of the driven circuit prior to supplying the signal current to the driven circuit.

Suzuki discloses a first precharge circuit (Fig. 7; 3A) electrically connected to the signal line and comprising a second transistor (diodes D_1-D_x) (col. 5, lines 50-54), a second switch (S_1-S_x) for controlling a connection between the driven circuit and a current source circuit (Fig. 7), wherein a gate electrode of a second transistor is electrically connected to a drain electrode of the second transistor (col. 5, lines 50-54; since connecting a transistor in such a manner causes the transistor to act as a diode, having a diode instead of a diode connected transistor would still act in the same manner), and wherein the first precharge circuit is configured to perform a precharge of

the driven circuit prior to supplying the signal current to the driven circuit (col. 5, line 65-col. 6, line 7).

It would have been obvious at the time of invention to modify Knapp with the teachings of Suzuki, precharge voltage being supplied to a node prior to supplying a signal current, because it would improve display characteristics since it would take less time to reach the display voltage because it has been precharged.

Knapp and Suzuki do not disclose wherein a gate width of the second transistor is larger than a gate width of the first transistor.

Shin discloses wherein a gate width of the second transistor is larger than a gate width of the first transistor (paragraph 16).

It would have been obvious at the time of invention to modify Knapp and Suzuki with the teachings of Shin, gate width of the second transistor being larger than the gate width of the first transistor, because it allows for a greater current to flow from the precharge circuit, which allows for a faster precharge.

In regards to claims 20 and 83, Knapp discloses a semiconductor device comprising:

a driven circuit comprising a first transistor (Fig. 2; first transistor (30));

a first switch for controlling an electrical connection between the driven circuit and the plural precharge circuits (Fig. 2; first switch (37));

Knapp does not disclose a second switch for controlling an electrical connection between the driven circuit and the plural current source circuits, plural precharge

circuits and plural current source circuits configured to input a signal current to the driven circuit.

Suzuki discloses a second switch (S_1-S_x) for controlling an electrical connection between the driven circuit and the plural current source circuits (Fig. 7), plural precharge circuits (Fig. 4 and col. 4, lines 40-51) and plural current source circuits configured to input a signal current to the driven circuit (Fig. 4 and col. 13-26).

It would have been obvious at the time of invention to modify Knapp with the teachings of Suzuki, precharge voltage being supplied to a node prior to supplying a signal current, because it would improve display characteristics since it would take less time to reach the display voltage because it has been precharged.

In regards to claims 21, 59 and 85, Knapp does not disclose the semiconductor device according to claim 20, further comprising plural amplifier circuits for amplifying currents outputted from the plural precharge circuits.

Suzuki discloses plural amplifier circuits for amplifying currents outputted from the plural precharge circuits (col. 5, line 62-col. 6, line 7).

It would have been obvious at the time of invention to modify Knapp with the teachings of Suzuki, precharge voltage being supplied to a node prior to supplying a signal current, because it would improve display characteristics since it would take less time to reach the display voltage because it has been precharged.

In regards to claims 28 and 63, Knapp does not disclose the semiconductor device according to claim 22,

wherein a gate and a drain of the second transistor are connected to each other.

Suzuki discloses wherein a gate and a drain of the second transistor are connected to each other (col. 5, lines 50-54; since connecting a transistor in such a manner causes the transistor to act as a diode, having a diode instead of a diode connected transistor would still act in the same manner).

It would have been obvious at the time of invention to modify Knapp with the teachings of Suzuki, precharge voltage being supplied to a node prior to supplying a signal current, because it would improve display characteristics since it would take less time to reach the display voltage because it has been precharged.

In regards to claim 60, Knapp does not disclose the semiconductor device according to claim 20, wherein at least one of the plural precharge circuits comprises a second transistor.

Suzuki discloses the semiconductor device according to claim 20, wherein at least one of the plural precharge circuits comprises a second transistor (diodes D_1-D_x) (col. 5, lines 50-54).

It would have been obvious at the time of invention to modify Knapp with the teachings of Suzuki, precharge voltage being supplied to a node prior to supplying a signal current, because it would improve display characteristics since it would take less time to reach the display voltage because it has been precharged.

In regards to claims 64-66, 79 and 86, Knapp and Suzuki do not disclose the amplifier is a source follower circuit.

However, Suzuki discloses an impedance transformation amplifier (col. 5, lines 62-64).

Since there is no benefit or advantage in the specification for choosing an amplifier circuit to be a source follower circuit, it would have been obvious to one of ordinary skill in the art at the time of invention to choose an amplifier circuit to be a source follower circuit based on a designer's choice because a source follower circuit is one type of amplifier circuit.

In regards to claims 73-75, 81 and 87, Knapp and Suzuki do not disclose the semiconductor device according to claim 1, wherein the precharge circuit is included in a current drive circuit.

However, Suzuki discloses a precharge circuit (Fig. 4 and col. 3, lines 52-65).

Since there is no benefit or advantage described in the specification for having the precharge circuit with the driven circuit, it would have been obvious at the time of invention to choose either having the precharge circuit included with the driven circuit or separate from the driven circuit based on a design choice.

Conclusion

4. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael Pervan whose telephone number is (571) 272-0910. The examiner can normally be reached on Monday - Friday between 8am - 5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Amr Awad can be reached on (571) 272-7764. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

MVP

/Amr Awad/
Supervisory Patent Examiner, Art Unit 2629

May 21, 2009